

Development of ZEUS – Zero - Emission Unmanned power Station

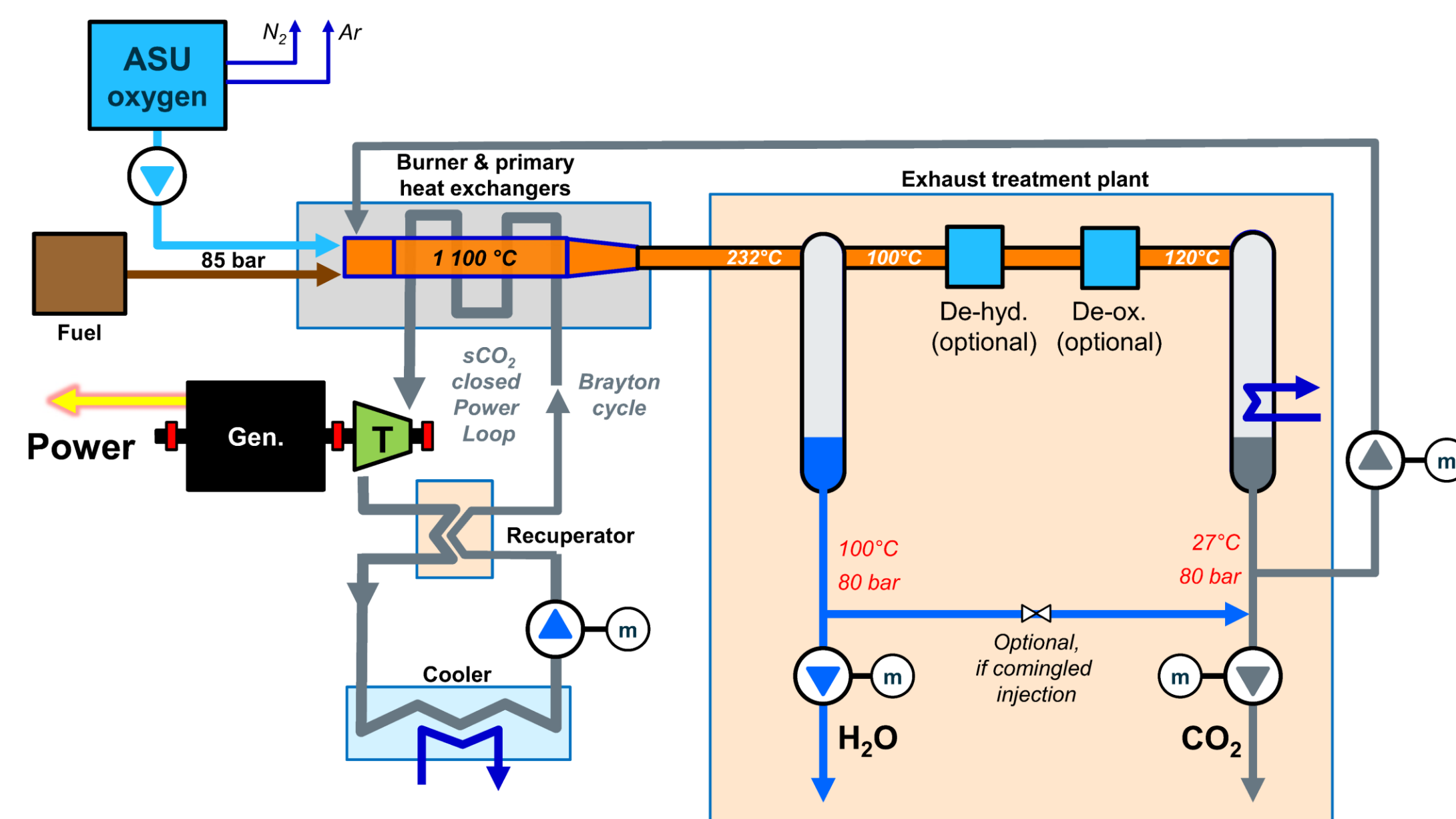
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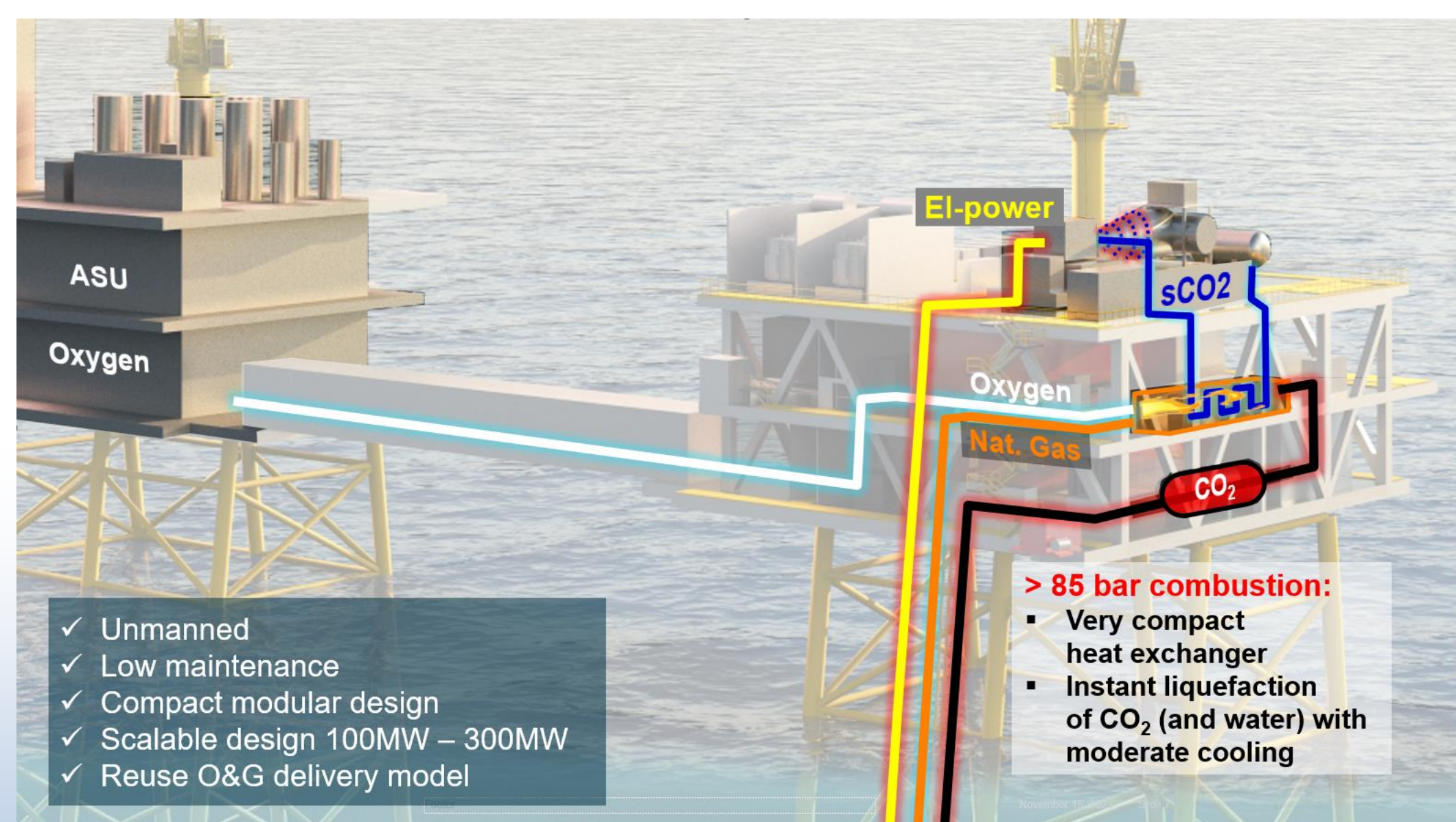
Aker Solutions

ZEUS concept

- Production of electrical power by burning natural gas and pure oxygen offshore, close to the production wells, onshore, on a topside, on floating production, storage and offloading units or subsea.
- ZEUS plant can use any gas as feedstock, including associated gas, methane hydrates, CO₂-rich gas and stranded gas, what realizes lower levelized costs of electricity.
- The high pressure ensures that when cooled, the exhaust is liquified instantly and can be re-injected by pumps directly into suitable formations in the vicinity and enhancing production rate over the reservoir life.

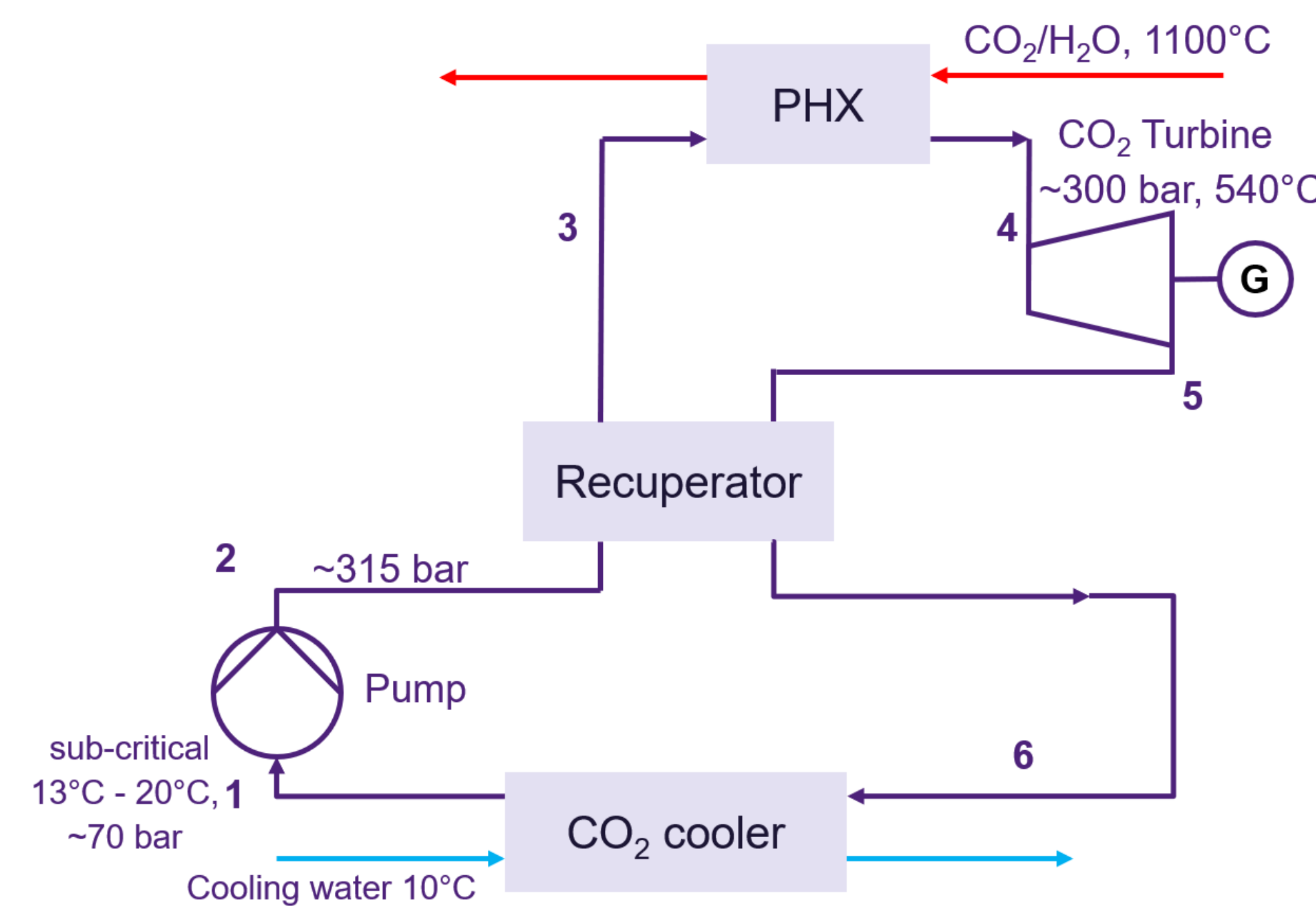


- **ZEUS application areas encompass:**
 - Decarbonising Existing Assets
 - Balancing Offshore Wind Power
 - Monetize Stranded Gas
 - Complement Green Hydrogen production

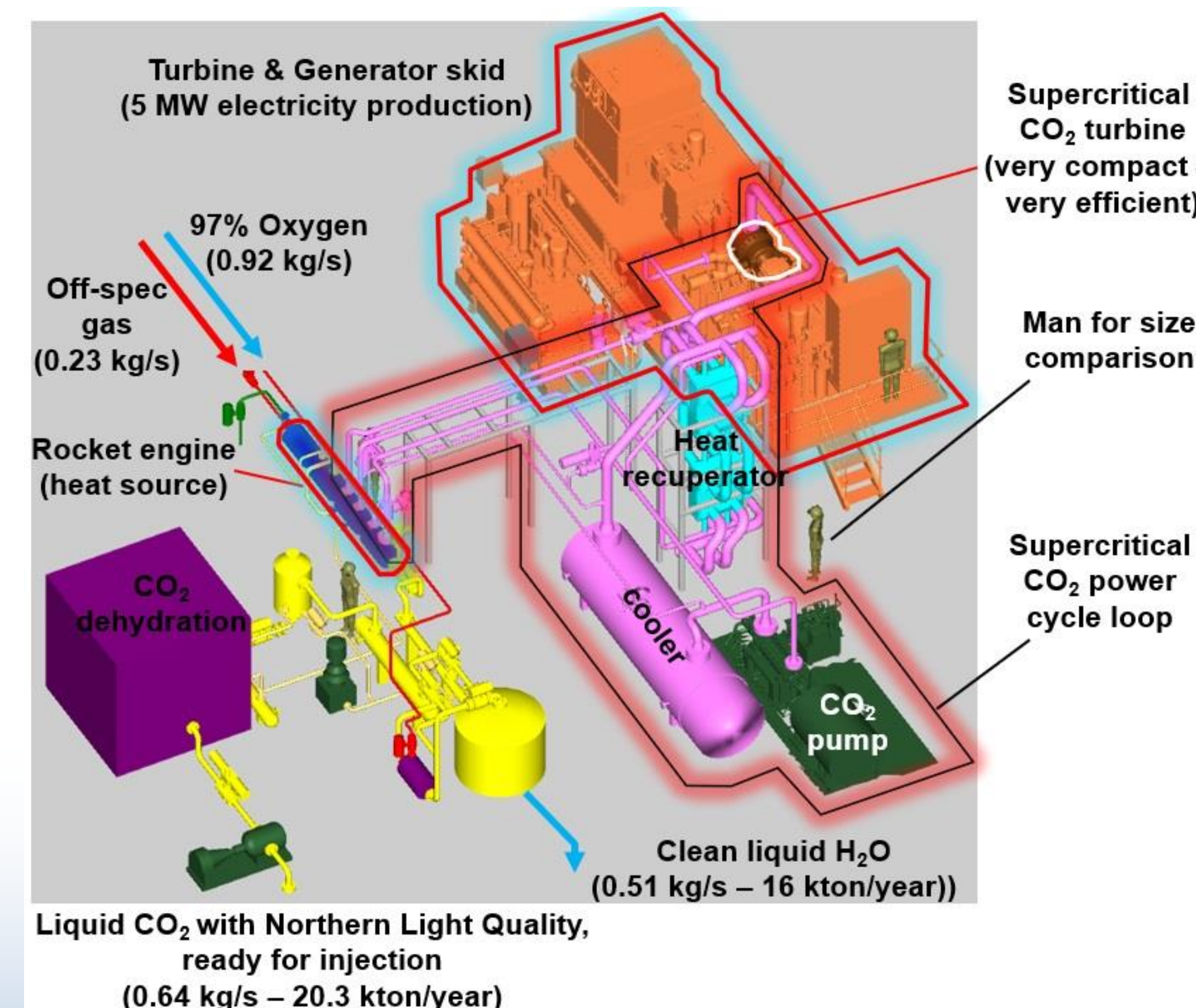


5 MW_e ZEUS demonstrator plant

- ZEUS demo plant pre-FEED finished in 2023, engineering study ongoing in 2024, demo scheduled for completion in 2027.
- Seeking for opportunities for strategic collaboration and commercialization.
- The demonstration plant will be installed in Canada in a suitable location with access to gas and where the CO₂ can be safely disposed. Additionally, the demonstration plant is planned to demonstrate economic benefits through enhanced oil recovery.



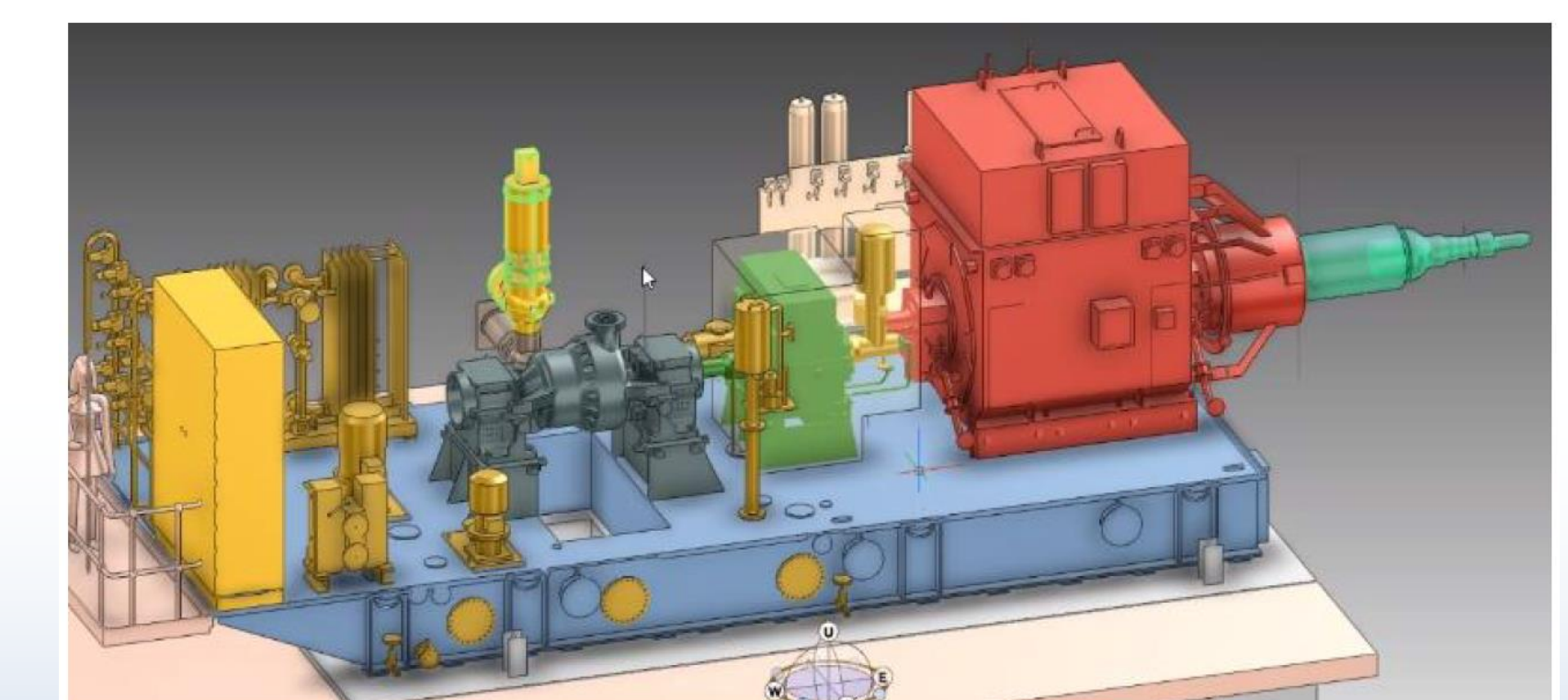
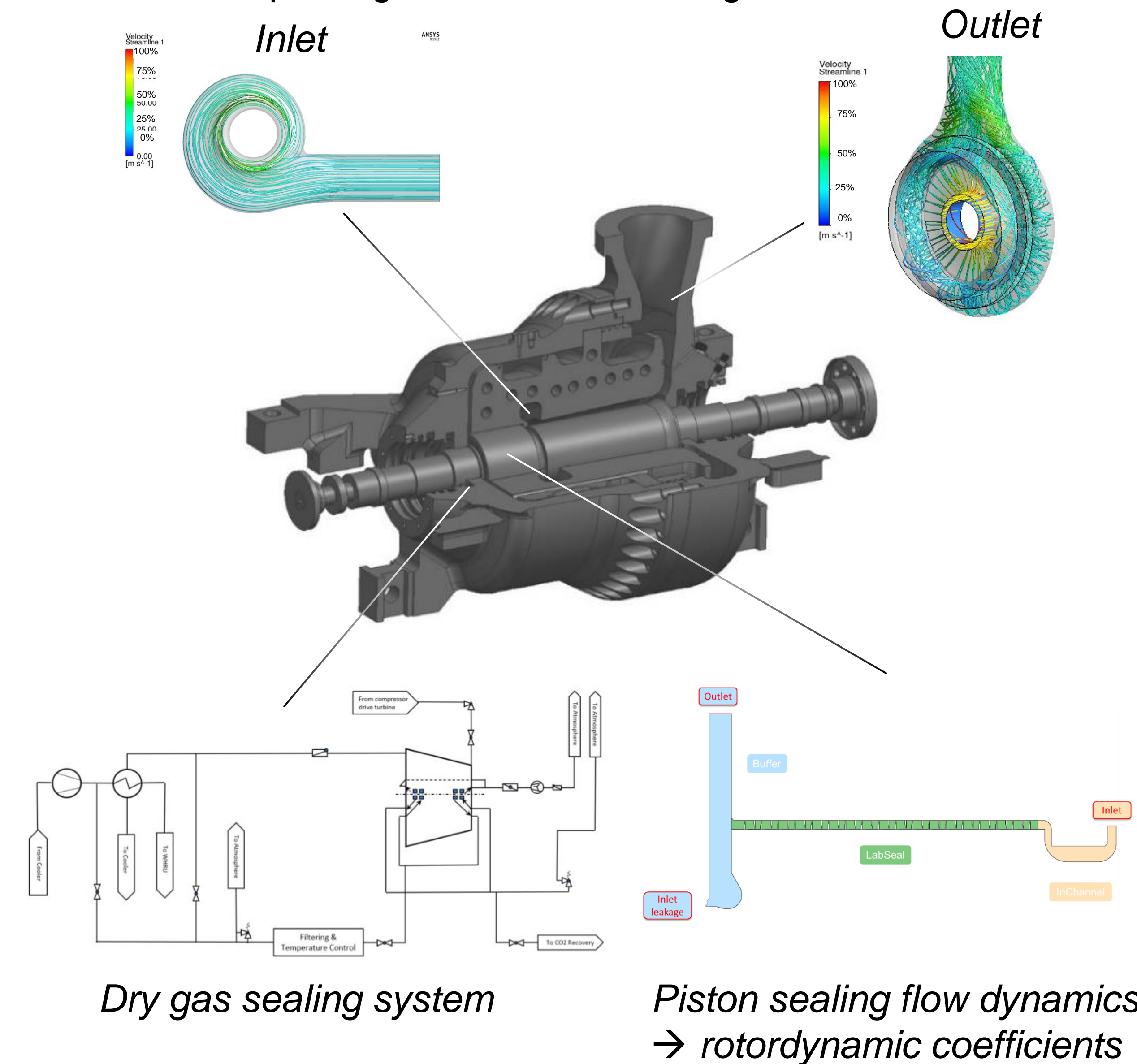
sCO₂ power cycle for ZEUS demonstrator plant



3D visualization of the 5 MW_e demonstrator plant

sCO₂ turbine + generator (SE)

- Barrel type turbine developed based on proven design of supercritical steam turbines.
- Up-scaling capability up to >200 MW.
- CFD-optimized inlet and outlet flow for max. efficiency.
- Proven steel-based materials selected based on specific sCO₂ properties.
- Dry gas sealings implemented for minimum leakage.
- Rotordynamic coefficients for sCO₂ determined by CFD.
- Turboset package on base frame engineered.



Power train package